The City of San Diego Water Department 2005 Watershed Sanitary Survey

Miramar Watershed

Volume 4 of 5

Data Collected Between 01/01/01– 12/31/05

ABBREVIATIONS

ACOE	Army Corps of Engineers
ADT	Average daily traffic
ADWF	Average dry weather flow
AF/Y	Acre-Feet per Year
AWWA	American Water Works Association
BLM	Bureau of Land Management – U.S. Federal
BMPs	Best Management Practices
CDF	California Department of Forestry
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEQA	California Environmental Quality Act
CFR	California Federal Regulation
cfs	Cubic feet per second
City	City of San Diego
CNDDB	California Natural Diversity Database
CNF	Cleveland National Forest
CNPS	California Native Plant Society
County	County of San Diego
CWA	San Diego County Water Authority
D/DBP	Disinfection/Disinfection By-Product
DHS	Department of Health Services
DMG	Division of Mines and Geology – State of California
dS/M	Decisiemens per meter
DSOD	Division of Safety of Dams
EPA	Environmental Protection Agency
ESWTR	Enhanced Surface Water Treatment Rule
GIS	Geographic Information System
gpd	Gallons per day
Gpm	Gallons per minute
HAAs	Haloacetic Acids

ABBREVIATIONS

Helix	Helix Water District
HPC	Heterotrophic Plate Count
HSU	Hydrographic Subunit
HU	Hydrographic Unit
HUMAN CON	Human Consumption
IOCs	Inorganic Chemicals
LPG	Liquid Propane Gas
LSE LF	Loose Leaf
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MG	Million Gallons
mg/L	Milligrams per liter (parts per million)
mgd	Million gallons per day
mgy	Million gallons per year
MHCP	Multiple Species Conservation Program
MSL	Mean Sea Level
MWD	Metropolitan Water District
N-GRNHS	Nursery Greenhouse
N-OUTDR	Nursery Outdoor
NEPA	National Environmental Protection Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NTU	Nephelometric Turbidity Unit
OTC	Olympic Training Center
PAHs	Polyaromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
RCA	Resource Conservation Area
RMWD	Ramona Municipal Water District
RO	Reverse Osmosis
RUIS	Regional Urban Information System

ABBREVIATIONS

RWQCB	California Regional Water Quality Board
SANDAG	San Diego Association of Governments
SCS	Soil Conservation Service – U.S.
SDWA	Safe Drinking Water Act - Federal
SMCL	Secondary Maximum Contaminant Level
SOCs	Synthetic Organic Chemicals
SP	Soluble Powder
SUB	Subtropical
SWPPPs	Storm Water Pollution Prevention Plans
TCR	Total Coliform Rule – Federal
TDH	Total Dynamic Head
TDS	Total Dissolved Solids
THMs	Trihalomethanes
TTHMs	Total Trihalomethanes
TOC	Total Organic Carbon
TRANSPL	Transplants
ug/L	Micrograms per liter (parts per billion)
UNCUL	Uncultivated
UNSP	Unspecified
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Society
VOCs	Volatile Organic Compounds
WDRs	Waste Discharge Requirements
WPCF	Water Pollution Control Facility
WRF	Water Reclamation Facility
WSS	Watershed Sanitary Survey
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

VOLUME 4

THE MIRAMAR WATERSHED

CHAPTER 1: SYNOPSIS

Introduction

This volume is the second five-year update of the 1996 Watershed Sanitary Survey (WSS) for the Miramar Watershed. The Miramar Watershed is comprised of the Miramar Reservoir and Miramar Water Treatment Plant (Figure 4-1.1). The Miramar Watershed has an area of 645 acres, or about one square mile. The primary function of the reservoir is to store imported water and provide short-term emergency supply to the Miramar Water Treatment Plant.

Watershed Sanitary Survey Requirements

The California Surface Water Treatment Rule (SWTR), in Title 22, Article 7, Section 64665 of the State Code of Regulations, requires every public water system using surface water to conduct a comprehensive sanitary survey of its watersheds every five years. The purpose of such a survey is to identify actual or potential sources of contamination, or any other watershed-related factor, which might adversely affect the quality of water used for domestic drinking water. The initial WSS was completed January 1, 1996 and is to be updated every five years thereafter.

The City of San Diego Water Department and its oversight agencies will use the Watershed Sanitary Survey Update (WSS Update) to evaluate water quality problems which might result from contaminants in the watersheds. The WSS Update will also serve as a basis for future watershed management and planning efforts.

Objectives

The main objectives of this WSS Update are to:

- Satisfy the regulatory requirement for a watershed sanitary survey.
- Identify and assess existing and potential future sources of contamination in the watersheds.
- Provide a general description of existing watershed control and management practices.
- Provide general recommendations for improving watershed management practices in order to protect the quality of the surface waters entering the reservoirs.

Conduct Of The Study

This update of the WSS for the Miramar Watershed was produced by the staff of the City of San Diego Water Department, Water Quality Laboratory. The survey covers the water supply system from the most remote points of the Miramar Watershed to the treatment facility. It was conducted by reviewing existing aerial photographs, GIS data, reports, water quality data and other record documents, and was supplemented by field surveys and personal knowledge of Water Department staff.

Report Organization

The organization of this volume has changed since the 2001 WSS Update. The Executive Summary, formerly Chapter 1, has been removed from the individual volumes. The remaining chapters have been rearranged as follows:

Chapter 1: Synopsis
Chapter 2: Description of Watersheds/Source Water System and Review of 2001 Watershed Sanitary Survey Recommendations
Chapter 3: Existing Conditions in the Watersheds
Chapter 4: Water Quality Assessment
Chapter 5: Conclusions and Recommendations

CHAPTER 2: DESCRIPTION OF WATERSHEDS/SOURCE WATER SYSTEM AND REVIEW OF 2001 WSS RECOMMENDATIONS

Introduction

The following is a summary of the findings of the 2001 Miramar Watershed Sanitary Survey Update. It covers Potential Contaminant sources, Water Quality, Watershed Management and Control Practices, and Conclusions and Recommendations for management of the watershed.

Potential Contaminant Sources

Recreation -

The Miramar Reservoir is open for recreational use year-round, seven days a week. Activities permitted include: fishing, boating, hiking, picnicking, bicycling, and foot traffic. No camping or swimming is allowed. Sources of contamination include fuel spills from boats, discarded trash, and excretions from domestic pets.

Runoff -

Average annual precipitation is less than 10 inches. Most of this runoff is diverted from the watershed via storm drains. Some soil erosion occurs on the slopes adjacent to the reservoir.

Significant Events -

There have not been any fires or significant earthquakes in the period from 1996 to 2000.

Other Sources -

There are no mines, wastewater/reclaimed water facilities, waste disposal facilities, septic systems, or hazardous material sites in this watershed. There has been only one sewer overflow, which was contained by the storm drain system.

Water Quality

Monitoring -

Samples were taken from the surface and at gauge 66 of the Miramar Reservoir, and from the treatment plant influent and effluent sampling points. There are no watershed sample points in the Miramar Watershed. Data was provided by the City of San Diego Water Quality Laboratory. The source water was monitored for physical, biological, and constituent (organic/inorganic) characteristics. Biological monitoring was confined to treatment plant influent and effluent. Results were compared to current and proposed regulatory standards for drinking water.

Raw Water Quality -

Results at times exceeded limits for treated drinking water; however, treatment at the plant produced water that consistently met all standards. Standards exceeded included turbidity, manganese, sulfate, and MTBE. Microbiological studies indicated the presence of indicator microorganisms at surface and at gauge 66.

Treated Water Quality -

Treated water quality consistently met or exceeded the requirements of the SWTR. The only exception was one pH reading of 8.7, out of 94 measurements made. Existing water quality data show that the Miramar

Water Treatment Plant would be in compliance with Phase I of the Stage 2 Disinfectants and Disinfection Byproducts Rule. A study will be required to determine the monitoring sites having the highest DBP. The Miramar WTP would also meet the requirements of the Long Term 2 Enhanced Surface Water Treatment Rule as well as proposed Arsenic and Sulfate regulations.

Emergency Plans -

The City has procedures in place against the event of a water treatment emergency.

Watershed Management and Control Practices

The City of San Diego exerts direct control over the majority of the Miramar Watershed. Management of the watershed lies with the City Water Department, Park and Recreation Department, and the Lakes Recreation Program. For privately owned lands, the City has planning and enforcement authority. A Watershed/Water Quality Protection Committee was established in September of 1994.

Conclusions

Potential contaminant sources in the watershed -

The most significant potential contaminant sources are recreational use, urban runoff, and discharge of filter backwash and sludge from the Miramar WTP.

Watershed management and control practices -

There is no formal watershed management plan. The City of San Diego directly controls City-owned land. For privately owned lands, the City monitors land use, regulates activities via permits, and coordinates with other agencies to regulate acitvities which might impact water quality. However, the coordination effort is limited to projects or actions that are known to City staff.

Existing desiltation basins upstream of the reservoir need to be better maintained and monitored. Additional desiltation and infiltration facilities may be needed for future development.

Water quality conditions -

Raw water monitoring indicates the presence of turbidity, coliforms, TOC and THM at levels of possible concern. These constituents are effectively treated by the Miramar WTP. Results of analyses of treated, finished water from the Miramar WTP show that it complies with all federal and state drinking water regulations.

Recommendations & Review

The underlying theme of all recommendations is protection of the watershed and source water quality. The recommendations fall into four categories:

- Water Quality Monitoring,
- Interjurisdictional Coordination
- Public Education

Following each recommendation will be a review of the actions taken and/or current status of the recommendation.

Water Quality Monitoring –

Recommendations

1) Continue to develop the monitoring program to include new parameters as needed. Use the program to identify trends in source water quality, and to work with landowners and agencies that may impact the watershed.
2) Augment existing City monitoring program with additional constituents, such as dissolve organic carbon, total nitrogen and total phosphorus and continue monitoring bromide.

3) Find and test methods of algae control while continuing to minimize use of copper sulfate.

Review

1) The Miramar watershed is very small, highly urbanized and approximately 100% built out. Almost all of the water draining from the small surrounding area of the reservoir is diverted to the storm drain system. Because of the above factors this recommendation will be abandoned for this watershed.
2) This recommendation will not be adopted on a watershed wide scale for this watershed. In addition to tests for by-products of algal decomposition and total organic carbon, we collect samples for total nitrogen and total phosphorus at the reservoir surface near the outlet tower.
3) No change in status

Interjurisdictional Coordination -

Recommendations

Establish working relationships with neighboring agencies by means of written City policies, workgroups, and a City Control Review Committee.

Review

The City contracted with Brown & Caldwell to produce a document providing guidelines for new development in our watersheds. This document has been completed and is being used by the City Water Department in its review of projects.The City Water Department has established a Watershed Manager and a Watershed Project Officer, and the City has established contacts with other agencies by participating on watershed plan committees. The City is reviewing more projects than it has in the past; however, no formal clearinghouse has been established.

Public Education –

Recommendations

1) Develop and distribute pamphlets to landowners and residents. Encourage a volunteer organization.
2) Establish a phone number for reporting spills and illegal dumping.
3) Conduct educational sessions on water quality.

Review

1) The City has worked with Project Wildlife and the Boy Scouts to build a kiosk at the entrance to the parking lot at Miramar Reservoir, and to develop an educational brochure concerning water quality and feeding the wildlife around Miramar Reservoir. In addition, everyone who purchases a lake permit receives a brochure that details the importance of keeping the reservoir clean because it is a source of our drinking water.
2) No change in status.
3) No change in status.